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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No. 90021-3
First Inventor or Application Identifier: Thomas C. Mielenhauser
Title: DATA PROCESSING APPARATUS AND METHOD
Express Mail Label No. EL14193739005

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. ☒ * Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☒ Specification [Total Pages 15]
(preferred arrangement set forth below)
- Descriptive title of the Invention
- Cross References to Related Applications
- Statement Regarding Fed sponsored R & D
- Reference to Microfiche Appendix
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings (if filed)
- Detailed Description
- Claim(s)
- Abstract of the Disclosure
3. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 9]
4. Oath or Declaration [Total Pages 1]
a. ☒ Newly executed (original or copy)
b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d))
(for continuation/divisional with Box 16 completed)
i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).

5. ☐ Microfiche Computer Program (Appendix)
6. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
a. ☐ Computer Readable Copy
b. ☐ Paper Copy (identical to computer copy)
c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

7. ☐ Assignment Papers (cover sheet & document(s))
8. ☐ 37 C.F.R. § 3.73(b) Statement of Power of (when there is an assignee) ☐ Attorney
9. ☐ English Translation Document (if applicable)
10. Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
11. Preliminary Amendment
12. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
13. ☐ Small Entity Statement(s) ☐ Statement filed in prior application, Status still proper and desired (PTO/SB/09-12)
14. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
15. ☒ Other: Transmittal Cover Letter with Certificate of Express Mail

* NOTE FOR ITEMS 1 & 15: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28)

16. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No. _____

Prior application information: Examiner _____ Group / Art Unit: _____

For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

17. CORRESPONDENCE ADDRESS

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re. Appln: Thomas C. Mielenhausen
Serial No.: Not yet assigned
Filed: May 11, 1999
For: DATA PROCESSING APPARATUS AND METHOD FOR CONVERTING
WORDS TO ABBREVIATIONS, CONVERTING ABBREVIATIONS TO
WORDS, AND SELECTING ABBREVIATIONS FOR INSERTION INTO
TEXT
Attorney: Nelson R. Capes
Attorney:
Docket No. 90021-3
Additional Fees: Charge to Deposit Account 50-0475

BOX PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

TRANSMITTAL COVER LETTER

Enclosed for filing, please find the following:

1. Utility Patent Application Transmittal;
2. Fee Transmittal for FY 1999;
3. Specification with claims and Abstract;
4. Nine (9) sheets of informal drawings;
5. Small Entity Declaration;
6. Declaration and Power of Attorney for Original Application;
7. Check in the amount of \$398.00; and
8. Postcard receipt.

I hereby certify that this document and the documents identified above are being deposited with the United States Postal Service as Express Mail, Receipt No. EL141937390US, in an envelope addressed to: BOX PATENT APPLICATION, Assistant Commissioner for Patents, Washington, D.C. 20231, on the date indicated below.

Respectfully submitted,

Dated: 5/11/99

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Attorney: Nelson R. Capes

Attorney:
Docket No. 90021-3

Additional Fees: Charge to Deposit Account 50-0475

BOX PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

SMALL ENTITY VERIFIED STATEMENT AND DECLARATION
BY INDIVIDUAL INVENTOR

A small entity status is hereby established in the application for a U.S. Utility Patent herein identified for the purpose of paying fees, as follows:

The undersigned inventor: (1) avers that he qualifies as an independent inventor in accordance with 37 C.F.R. § 1.9(c); (2) avers that he has not assigned, granted, conveyed or licensed, and is under no obligation to assign, grant, convey or license any rights in the invention to any other person or entity, not identified herein.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by

fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Thomas C. Mielenhausen

Dated: May 3, 1999

Thomas Mielenhausen
Inventor's Signature

[NRC/me]/515525.1

BACKGROUND OF THE INVENTION

A number of professions, industries, trades and occupations use standard abbreviations for certain words and phrases. The data processing apparatus and method of this patent application enables users of word processing programs automatically to convert those words and phrases to the standard abbreviations, and to convert said abbreviations to their corresponding words and phrases, in a manner similar to a spell-checking apparatus and method. The data processing apparatus and method of this patent application also enables users of word processing programs to select from a list of standard abbreviations for insertion into the text. The data processing apparatus and method of this patent application also allows for adding to, editing, updating and customizing the list of words and phrases and of abbreviations which are to correspond to each other within the apparatus and method.

A number of existing products have some, but not all, features of the present invention. For example, the CiteRite™ II software from Lexis-Nexis checks legal citations only for proper form and flags errors. This software is not general enough to use with abbreviations in other fields, and does not convert abbreviations to words. The Oberon Citation7 software supports the proper generation of citations with abbreviations from user-defined tables, but does not convert abbreviations to words or allow the user to select from a list of abbreviations corresponding to a given word. The Quickwords™ software from Corel only works with a single word processor, WordPerfect™, and only converts words to abbreviations, not abbreviations to words.

There is a need for a completely generalized word-to-abbreviation and abbreviation-to-word converter program that works with any type of text containing abbreviations from any profession, industry, trade, or occupation. The software program must allow the user to select the word or abbreviation to be converted and should provide the user with a list of possible conversions. The program should also scan an entire text for a word or abbreviation to be converted and automatically make the conversion.

SUMMARY OF THE INVENTION

A data processing method for maintaining and customizing a list of words, phrases, and abbreviations that are standard in a profession, industry, trade or occupation, for automatic insertion of abbreviations from the list into the text, for converting selected words

and phrases in the text to abbreviations, for converting selected abbreviations in the text to words and phrases, and for automatically converting a number of words and phrases to abbreviations, and abbreviations to words and phrases, throughout the text, comprising the steps of:

- a) storing in a memory a first data structure encoding a plurality of words and corresponding abbreviations;
- b) storing in a memory a second data structure encoding a plurality of abbreviations and corresponding words;
- c) selecting a word in the text to be converted to an abbreviation and converting the selected word to a corresponding abbreviation using the first data structure; and
- d) selecting an abbreviation in the text to be converted to a word and converting the abbreviation to a word using the second data structure.

A data processing method for maintaining and customizing a list of words, phrases, and abbreviations that are standard in a profession, industry, trade or occupation and for allowing the user to insert abbreviations from the list at any position in a text, comprising the steps of:

- a) storing in a memory a first data structure encoding a plurality of words and corresponding abbreviations;
- b) the user instructing the data processing method to select a position in the text for insertion of an abbreviation;
- c) displaying a list of words and corresponding abbreviations from the first data structure;
- d) the user instructing the data processing method to select an abbreviation from the list; and

- e) inserting the selected abbreviation at the selected position in the text.

A data processing apparatus for maintaining and customizing a list of words, phrases, and abbreviations that are standard in a profession, industry, trade or occupation, for automatic insertion of abbreviations from the list into the text, for converting selected words and phrases in the text to abbreviations, for converting selected abbreviations in the text to words and phrases, and for automatically converting a number of words and phrases to abbreviations, and abbreviations to words and phrases, throughout the text, comprising:

- a) a computer having a memory, a central processing unit, and an input/output unit;
- b) a first data structure recorded in the memory, the first data structure encoding a plurality of words and corresponding abbreviations;
- c) a second data structure recorded in the memory, the second data structure encoding a plurality of abbreviations and corresponding words;
- d) the text in the memory containing words and abbreviations; and
- e) a computer program executing in the central processing unit and defining structural and functional relationships among the plurality of words and the plurality of abbreviations, the computer program receiving information on the selected words and abbreviations from an operator through the input/output unit, and the computer program responding to operator selection of words and abbreviations, converting selected words to corresponding abbreviations, converting selected abbreviations to corresponding words, and inserting abbreviations into the text.

A principal object and advantage of the data processing apparatus and method is that it enables users of any word processing program automatically to convert words and phrases to abbreviations that are standard in a profession, industry, trade or occupation, and to convert

abbreviations to their corresponding words or phrases, in a manner similar to a spell-checking apparatus and method.

A second principal object and advantage of the data processing apparatus and method is that it allows for adding to, editing, updating and customizing the list of words and phrases and abbreviations which are to correspond to each other within the apparatus and method.

A third principal object and advantage of the data processing apparatus and method is that it enables the user automatically to insert said abbreviations into the text from said list.

A fourth principal object and advantage of the data processing apparatus and method is that it can scan an entire text for instances of a selected word or abbreviation and automatically convert each instance to the corresponding abbreviation or word.

A fifth principal object and advantage of the data processing apparatus and method is that it displays a list of possible conversions from which the user can select.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of the principal functions of the data processing method and apparatus;

FIG. 2 is a flowchart of the data processing method;

FIG. 3 is a schematic of the window which displays the list of abbreviations, from which the user can add to, edit, update and customize the list of words and phrases and abbreviations which are to correspond to each other;

FIG. 4 is a schematic of the window which displays the list of abbreviations, from which the user can insert an abbreviation into the text;

FIG. 5 is a schematic of the window which suggests and enables the user to select from conversions of a word or phrase with more than one corresponding abbreviation; and

FIG. 6 is a schematic of the window which suggests and enables the user to select from conversions of an abbreviation with more than one corresponding word or phrase.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The data processing apparatus and method for converting words and phrases to abbreviations, and converting abbreviations to words and phrases, is illustrated in the attached block diagram (FIG. 1), whose functions are explained further in the flowcharts. It will be understood by one of ordinary skill in the art that FIG. 1 also serves as a pictorial description of the data structures created by the apparatus in order to carry out the described data processing.

A flowchart of the data processing method of the present invention is presented in FIG. 2. It should be understood the order of execution of these steps is not critical.

Illustrative windows for the apparatus's features are shown in FIGS. 3 through 6.

Step 100: Adding to, editing, updating and customizing a list of words and phrases and corresponding abbreviations.

The data processing apparatus and method allows the user to add to, edit, update and customize a pre-defined list of words and phrases and corresponding abbreviations that are standard in various professions, industries, trades and occupations. The utility of the data processing apparatus and method is therefore dynamic. The list of words and phrases and abbreviations may be modified based on the unique needs of the user and developments in various professions, industries, trades and occupations. FIG. 3 is a schematic of the window which displays, and enables the user to modify, the list of words and phrases and corresponding abbreviations described above.

Step 200: Inserting abbreviations from said list into the text.

The user can automatically insert an abbreviation into the text via a window which displays the list of words and phrases and corresponding abbreviations described in Step 100 above. The user can open the window via a mouse or keyboard command. FIG. 4 is a schematic of the window.

Step 300: Converting a word or phrase in the text to a corresponding abbreviation.

Step 400: Converting an abbreviation in the text to a corresponding word or phrase.

The user can automatically convert a word or phrase in the text to a corresponding abbreviation by highlighting the word or phrase and initiating conversion via a mouse or keyboard command. Likewise, the user can convert an abbreviation in the text to a corresponding word or phrase by highlighting said abbreviation and initiating conversion via a mouse or keyboard command. The mouse command involves pointing the cursor at an on-screen button or drop-down menu item.

Step 301: Selecting from multiple abbreviations corresponding to a word or phrase.

Step 401: Selecting from multiple words or phrases corresponding to an abbreviation.

Occasionally more than one abbreviation corresponds to a word or phrase, and more than one word or phrase corresponds to an abbreviation. If this situation applies to an abbreviation or word or phrase that the user is converting (as described in Steps 300 and 400 above), the window depicted in FIG. 5 or FIG. 6 opens. The window depicted in FIG. 5 enables the user to select from suggested conversions of a word or phrase with more than one corresponding abbreviation. The window depicted in FIG. 6 enables the user to select from suggested conversions of an abbreviation with more than one corresponding word or phrase.

Step 500: Checking the text for words and phrases corresponding to abbreviations, and converting said words and phrases to said abbreviations.

Step 600: Checking the text for abbreviations corresponding to words and phrases, and converting said abbreviations to said words or phrases.

The data processing apparatus and method enables the user to perform an abbreviation check of an entire text. The check can be initiated via a mouse or keyboard command. The mouse command involves pointing the cursor at an on-screen button or drop-down menu item.

The user can check the text for words and phrases corresponding to abbreviations, and converting said words and phrases to said abbreviations, via a window that suggests said conversions. The window is similar to that depicted in FIG. 5.

The user can check the text for abbreviations corresponding to words and phrase, and converting said abbreviations to said words and phrases, via a window that suggests said conversions. The window is similar to that depicted in FIG. 6.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being made to the appended claims rather than to the foregoing description to indicate the scope of the invention.

WHAT IS CLAIMED:

1. A data processing method for maintaining and customizing a list of words, phrases, and abbreviations that are standard in a profession, industry, trade or occupation, for insertion of abbreviations from the list into text, for converting selected words and phrases in the text to abbreviations, for converting selected abbreviations in the text to words and phrases, and for automatically converting a number of words and phrases to abbreviations, and abbreviations to words and phrases, throughout the text, comprising the steps of:

a) storing in a memory a first data structure encoding a plurality of words and corresponding abbreviations;

b) storing in a memory a second data structure encoding a plurality of abbreviations and corresponding words;

c) selecting a word in the text to be converted to an abbreviation and converting the selected word to a corresponding abbreviation using the first data structure; and

d) selecting an abbreviation in the text to be converted to a word and converting the abbreviation to a word using the second data structure.

2. The method of claim 1, further comprising the step of adding to, editing, updating and customizing the first data structure and second data structure.

3. The method of claim 1, wherein the word is selected by the user using a keyboard command.

4. The method of claim 1, wherein the word is selected by the user using a mouse.

5. The method of claim 1, wherein the abbreviation is selected by the user using a keyboard command.

6. The method of claim 1, wherein the abbreviation is selected by the user using a mouse.

7. The method of claim 1, further comprising the step of scanning the text for words to be converted to abbreviations and converting words selected by the data processing method to corresponding abbreviations.

8. The method of claim 1, further comprising the step of scanning the text for abbreviations to be converted to words and converting abbreviations selected by the data processing method to corresponding words.

9. The method of claim 1, further comprising the steps of displaying a list of suggested abbreviations corresponding to the selected word and receiving input from the user to choose the desired abbreviation.

10. The method of claim 1, further comprising the steps of displaying a list of suggested words corresponding to the selected abbreviation and receiving input from the user to choose the desired word.

11. The method of claim 7, further comprising the steps of displaying a list of suggested abbreviations corresponding to the selected words and receiving input from the user to choose the desired abbreviation.

12. The method of claim 8, further comprising the steps of displaying a list of suggested words corresponding to the selected abbreviations and receiving input from the user to choose the desired word.

13. The method of claim 1, further comprising the steps of the user selecting an abbreviation from the first data structure and inserting the abbreviation into the text at a position selected by the user.

14. The method of claim 1, further comprising the steps of the user selecting an abbreviation from the second data structure and inserting the abbreviation into the text at a position selected by the user.

15. The method of claim 1, further comprising the steps of the user selecting an abbreviation from the second data structure and inserting the abbreviation into the text at a position selected by the user.

15. A data processing method for maintaining and customizing a list of words, phrases, and abbreviations that are standard in a profession, industry, trade or occupation and for allowing the user to insert abbreviations from the list at any position in a text, comprising the steps of:

a) storing in a memory a first data structure encoding a plurality of words and corresponding abbreviations;

b) the user instructing the data processing method to select a position in the text for insertion of an abbreviation;

c) displaying a list of words and corresponding abbreviations from the first data structure;

d) the user instructing the data processing method to select an abbreviation from the list; and

e) inserting the selected abbreviation at the selected position in the text.

16. The data processing method of claim 15, further comprising a step of adding to, editing, updating and customizing the first data structure and second data structure.

17. A data processing apparatus for maintaining and customizing a list of words, phrases, and abbreviations that are standard in a profession, industry, trade or occupation, for insertion of abbreviations from the list into text, for converting selected words and phrases in the text to abbreviations, for converting selected abbreviations in the text to words and phrases, and for automatically converting a number of words and phrases to abbreviations, and abbreviations to words and phrases, throughout the text, comprising:

- a) a computer having a memory, a central processing unit, and an input/output unit;
- b) a first data structure recorded in the memory, the first data structure encoding a plurality of words and corresponding abbreviations;
- c) a second data structure recorded in the memory, the second data structure encoding a plurality of abbreviations and corresponding words;
- d) text in the memory containing words and abbreviations; and
- e) a computer program executing in the central processing unit and defining structural and functional relationships among the plurality of words and the plurality of abbreviations, the computer program receiving information on the words and abbreviations to be selected from an operator through the input/output unit, and the computer program responding to operator selection of words and abbreviations, converting selected words to corresponding abbreviations, converting selected abbreviations to corresponding words, and inserting words and abbreviations into the text.

18. The apparatus of claim 17, wherein the computer program displays a list of abbreviations corresponding to selected words to the operator through the input/output unit.

19. The apparatus of claim 17, wherein the computer program displays a list of words corresponding to selected abbreviations to the operator through the input/output unit.

20. The apparatus of claim 17, wherein the computer program automatically converts words selected by the computer program throughout the text to corresponding abbreviations.

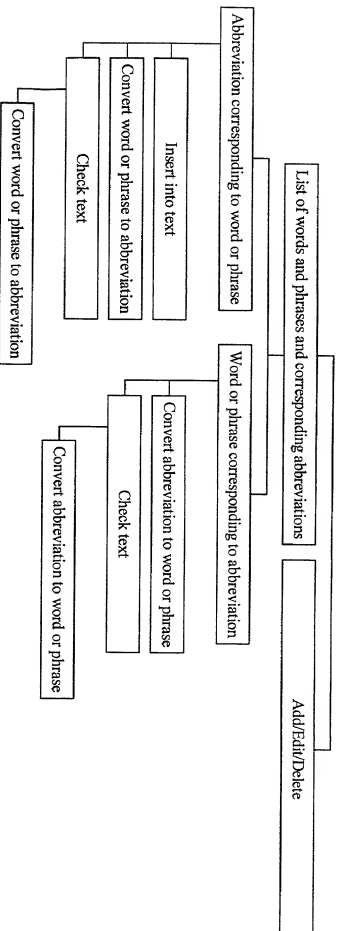
21. The apparatus of claim 17, wherein the computer program automatically converts abbreviations selected by the computer program throughout the text to corresponding words.

22. The apparatus of claim 17, wherein the computer program responds to operator input to select a position in the text for insertion of an abbreviation, displays a list of words and abbreviations from the first data structure, and allows an operator to select an abbreviation for insertion at the selected position in the text.

ABSTRACT

A data processing method and apparatus for maintaining and customizing a list of words, phrases, and abbreviations that are standard in a profession, industry, trade or occupation, for insertion of abbreviations from the list into the text, for converting selected words and phrases in the text to abbreviations, for converting selected abbreviations in the text to words and phrases, and for automatically converting a number of words and phrases to abbreviations, and abbreviations to words and phrases, throughout the text, comprising the steps of: storing in a memory a first data structure encoding a plurality of words and corresponding abbreviations; storing in a memory a second data structure encoding a plurality of abbreviations and corresponding words; selecting a word in the text to be converted to an abbreviation and converting the selected word to a corresponding abbreviation using the first data structure; and selecting an abbreviation in the text to be converted to a word and converting the abbreviation to a word using the second data structure.

Abbreviations Software Program Block Diagram



E16.1

START



100
INPUT LIST OF WORDS
AND PHRASES AND
CORRESPONDING
ABBREVIATIONS



200
INSERT ABBREVIATION
FROM LIST INTO TEXT



300
CONVERT WORD OR
PHRASE IN TEXT TO
CORRESPONDING
ABBREVIATION



400
CONVERT
ABBREVIATION IN
TEXT TO
CORRESPONDING
WORD OR PHRASE



TO
500

FIG. 2a

FROM
400



500
CHECK TEXT FOR
WORDS AND PHRASES
CORRESPONDING TO
ABBREVIATIONS;
CONVERT WORDS AND
PHRASES TO
CORRESPONDING
ABBREVIATIONS



600
CHECK TEXT FOR
ABBREVIATIONS
CORRESPONDING TO
WORDS AND PHRASES;
CONVERT
ABBREVIATIONS TO
CORRESPONDING
WORDS AND PHRASES



END

FIG 24

300



301
SELECT FROM
MULTIPLE
ABBREVIATIONS
CORRESPONDING TO
WORD OR PHRASE



END
300

FIG. 2c

400



401
SELECT FROM
MULTIPLE WORDS OR
PHRASES
CORRESPONDING TO
ABBREVIATION



END
400

FIG 3!

Abbreviations – Authorized Setup



Word or Phrase:

Abbreviation:

--	--

Highlighted Abbreviation

Add

Edit

Delete

Cancel

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FIG. 3

Insert Abbreviation

☐ X
☐ ?

Word or Phrase:

Abbreviation:

Insert

Add/Edit

Cancel

FIG 4

Replace Word or Phrase With Abbreviation



Word or Phrase:

Suggested
Replacement(s):

▼

Replace

Replace All

Ignore

Ignore All

Add/Edit

Cancel

?

X

Replace Abbreviation With Word or Phrase

Abbreviation:

Suggested Replacement(s):

Replace

Ignore

Add/Edit

Replace All

Ignore All

Cancel

FIG. 6

DECLARATION AND POWER OF ATTORNEY FOR ORIGINAL APPLICATION

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below my name; and that I believe I am an original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DATA PROCESSING APPARATUS AND METHOD FOR CONVERTING WORDS TO ABBREVIATIONS, CONVERTING ABBREVIATIONS TO WORDS, AND SELECTING ABBREVIATIONS FOR INSERTION INTO TEXT

the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above-entitled specification, including the claims.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 35 U.S.C. §120 and Title 37, Code of Federal Regulations, §1.56(a).

If this application is a continuation, or a continuation-in-part application filed under the conditions specified in 35 U.S.C. §120 or 37 C.F.R. §1.53, I acknowledge the duty to disclose to the Patent Office all information known to me to be material to patentability as defined in said §1.56, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby appoint the following attorneys to prosecute this application and transact all business in the U.S. Patent and Trademark Office connected therewith: Gerald E. Helget (Reg. No. 30,948) and Nelson R. Capes (Reg. No. 37,106).

Please direct all telephone calls to attorney Nelson R. Capes at (612) 305-1498.

Please address all correspondence to:

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901 Marquette Avenue
Minneapolis, MN 55402-2859

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further acknowledge being warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and may jeopardize the validity of the application or any patent issued thereon.

FULL NAME OF FIRST INVENTOR IS: Thomas C. Mielenhausen

INVENTOR'S SIGNATURE

Thomas C. Mielenhausen DATE 5/3/99

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Citizenship: United States of America

Invention: DATA PROCESSING APPARATUS AND METHOD FOR CONVERTING
WORDS TO ABBREVIATIONS, CONVERTING ABBREVIATIONS TO
WORDS, AND SELECTING ABBREVIATIONS FOR INSERTION INTO
TEXT